

through homologous recombination, to contain a galk cassette. Further modification with a GFP cassette is underway.

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Program/Abstract # 61

Eukaryon: An undergraduate scholarship journal that supports inquiry-based pedagogy and strengthens a community of undergraduate scholars

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Undergraduate research and inquiry-based pedagogy are becoming increasingly crucial components in college and university curricula in the United States. Providing undergraduates with the opportunity to publish their scholarship serves as a pedagogical tool to increase scientific literacy and motivation for scientific careers. Spurred by an NSF-CCLI grant in 2004, the Lake Forest College Biology Department accordingly developed a peer-reviewed undergraduate research journal of life science scholarship entitled *Eukaryon* (www.lakeforest.edu/eukaryon). In each annual issue, *Eukaryon* publishes scholarship in any sub-discipline of the life sciences that students have produced within the department's research-rich undergraduate classrooms and faculty labs, in a variety of scientific and journalistic formats. Here, we first detail three aspects of the journal's development: 1) how it is exclusively governed, published, and financed by undergraduates; 2) how data from a three-year follow up survey demonstrates maintenance of publication selectivity, and assesses student familiarity of journal and of scientific publication process; and 3) how the board is continually expanding new publication categories to best reflect a dynamic biology curriculum and to promote development of effective leadership within its student scholars. Given the rapid success *Eukaryon* has enjoyed at our institution, we encourage the adaptation and implementation of such journals at undergraduate institutions that further strengthen their community of students as scholars and their inquiry-based pedagogy. (Supported by NSF-CCLI).

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Program/Abstract # 62

Service learning with GEISHA and other online databases

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The GEISHA (Gallus Expression In Situ Hybridization Analysis) initiative at the University of Arizona has partnered with undergraduate students and faculty at two other universities (BYU, Clemson) to create a unique service-learning opportunity for students. Students work with local mentors and peer teachers to learn to curate entries for the GEISHA database from the primary literature. Students learn to locate specific papers in PubMed, and locate information within the results and methods sections of those papers on a specific gene's expression and the probe used to detect it. They find the DNA sequence for that probe or a comparable cDNA in the genomic databases (NCBI, ensembl), and may be required to use primer sequences to extract specific probe sequence from a cDNA sequence. They learn to parse figure legends for information on

staging and anatomical locations of expression, get exposure to developmental biology, and work with an editor to polish a submission for public consumption. In pre- and post-surveys students reported an average gain of 1.6 points or 40% (1=0%, 2=25%, 3=50%, 4=75%, 5=>95%) in one semester in five adaptable academic skills related to this project. In addition, faculty mentors reported that this gave interested undergraduate students some research-related experience and was a good screening tool to identify motivated, independent students for future lab research projects. We are working to improve and expand this collaborative opportunity between GEISHA and undergraduate developmental biology instructors and their students. Our web location is <http://geisha.arizona.edu>. This work is supported by NIH 1P41HD064559 to PBA.

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Program/Abstract # 63

Using writing to teach developmental biology, using developmental biology to teach writing: Assessment tools

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Writing at the University of Redlands is taught via a Writing Across the Curriculum program. Students complete two writing-intensive courses, one at the lower level (WA) and one in the junior or senior year that concentrates on writing within the major discipline (WB). Both are taught by faculty of all disciplines who are trained in a three day workshop. Biology 348, the upper division developmental biology course, is taught as a WB course. A variety of writing assignments are used. Students write one full lab report, with revision, with other lab reports concentrating on specific writing skills often deficient in student reports. They also write a term paper discussing two primary sources in detail. This paper is peer reviewed and revised. Students collaborate in groups of four to deliver 80 minute lectures based on the chapters corresponding to these topics. There is also a journal club component in lecture, with a writing exercise designed to teach them reading skills and presentation exercises designed to teach critical thinking skills. Initial assessments of the course have indicated an increase in critical thinking skills, an improved ability to read the primary literature, and a greater understanding of experimental methods, design and developmental concepts. This poster will describe current attempts to develop assessment tools to evaluate the effectiveness of the course.

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Program/Abstract # 64

Demystifying and humanizing research through intensive analysis of primary literature—Testing the C.R.E.A.T.E. approach in diverse student populations and topic areas

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Traditional Biology teaching rarely emphasizes the creativity of science careers or encourages deep analysis of material. To address this deficiency, we previously developed C.R.E.A.T.E. (Consider, Read, Elucidate hypotheses, Analyze data, and Think of the next Experiment). C.R.E.A.T.E. students achieve deeper understanding of the evolution of projects by analyzing series of papers from individual labs, and gain novel insights into 'the research life' from authors' thoughtful responses to a student email survey. At CCNY, an MSI, C.R.E.A.T.E. students made gains in critical thinking ability, science attitudes and epistemological beliefs. To test C.R.E.A.T.E. more